

11420122.APP  
SEQUENCE LISTING

<110> Pausch, Mark H  
Price, Laura A

<120> POTASSIUM CHANNELS, NUCLEOTIDE SEQUENCES ENCODING THEM,  
AND METHODS OF USING SAME

<130> 01142.0122 SEQUENCE LISTING

<140> 08/816,011

<141> 1997-03-11

<150> 07/332,312

<151> 1994-10-31

<150> PCT/US95/14364

<151> 1995-10-25

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<170> PatentIn Ver. 2.1

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&lt;213&gt; Drosophila melanogaster

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&lt;211&gt; 24

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&lt;213&gt; Drosophila melanogaster

&lt;400&gt; 10

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&lt;213&gt; Drosophila melanogaster

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<213> *Caenorhabditis elegans*

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&lt;210&gt; 37

&lt;211&gt; 481

&lt;212&gt; PRT

<213> *Drosophila melanogaster*

&lt;400&gt; 37

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Pro Thr Thr Phe Ala Gly Arg Met Ile Met Ile Ala Tyr Ser Val Ile

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115

120

125

Gly Ile Pro Val Asn Gly Ile Leu Phe Ala Gly Leu Gly Glu Tyr Phe  
 130 135 140

Gly Arg Thr Phe Glu Ala Ile Tyr Arg Arg Tyr Lys Lys Tyr Lys Met  
 145 150 155 160

Ser Thr Asp Met His Tyr Val Pro Pro Gln Leu Gly Leu Ile Thr Thr  
 165 170 175

Val Val Ile Ala Leu Ile Pro Gly Ile Ala Leu Phe Leu Val Leu Pro  
 180 185 190

Cys Val Gly Val His Leu Leu Arg Glu Leu Gly Leu Ser Ser Ile Ser  
 195 200 205

Leu Tyr Tyr Ser Tyr Val Thr Ile Thr Thr Ile Gly Phe Gly Asp Tyr  
 210 215 220

Val Pro Thr Phe Gly Ala Asn Gln Pro Lys Glu Phe Gly Gly Trp Phe  
 225 230 235 240

Val Val Tyr Gln Ile Phe Val Ile Val Trp Phe Ile Phe Ser Leu Gly  
 245 250 255

Tyr Leu Val Met Ile Met Thr Phe Ile Thr Arg Gly Leu Gln Ser Lys  
 260 265 270

Lys Leu Ala Tyr Leu Glu Gln Gln Leu Ser Ser Asn Leu Lys Ala Thr  
 275 280 285

Gln Asn Arg Ile Trp Ser Gly Val Thr Lys Asp Val Gly Tyr Leu Arg  
 290 295 300

Arg Met Leu Asn Glu Leu Tyr Ile Leu Lys Val Lys Pro Val Tyr Thr  
 305 310 315 320

Asp Val Asp Ile Ala Tyr Thr Leu Pro Arg Ser Asn Ser Cys Pro Asp  
 325 330 335

Leu Ser Met Tyr Arg Val Glu Pro Ala Pro Ile Pro Ser Arg Lys Arg  
 340 345 350

Ala Phe Ser Val Cys Ala Asp Met Val Gly Ala Gln Arg Glu Ala Gly  
 355 360 365

Met Val His Ala Asn Ser Asp Thr Asp Leu Thr Lys Leu Asp Arg Glu  
 370 375 380

Lys Thr Phe Glu Thr Ala Glu Ala Tyr His Gln Thr Thr Asp Leu Leu  
 385 390 395 400

Ala Lys Val Val Asn Ala Leu Ala Thr Val Lys Pro Pro Pro Ala Glu  
 405 410 415

Gln Glu Asp Ala Ala Leu Tyr Gly Gly Tyr His Gly Phe Ser Asp Ser  
 420 425 430

Gln Ile Leu Ala Ser Glu Trp Ser Phe Ser Thr Val Asn Glu Phe Thr  
 435 440 445

Ser Pro Arg Arg Pro Arg Ala Arg Ala Cys Ser Asp Phe Asn Leu Glu  
 Page 12

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460

450

455

Ala Pro Arg Trp Gln Ser Glu Arg Pro Leu Arg Ser Ser His Asn Glu  
 465 470 475 480

Trp

<210> 38  
 <211> 337  
 <212> PRT  
 <213> Caenorhabditis elegans

<220>  
 <221> UNSURE  
 <222> (337)  
 <223> X AT RESIDUE 337 IS AN UNKNOWN RESIDUE

<400> 38  
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 20 25 30  
 Ser Ile Phe Phe Ala Val Thr Val Val Thr Thr Ile Gly Tyr Gly Asn  
 35 40 45  
 Pro Val Pro Val Thr Asn Ile Gly Arg Ile Trp Cys Ile Leu Phe Ser  
 50 55 60  
 Leu Leu Gly Ile Pro Leu Thr Leu Val Thr Ile Ala Cys Leu Ala Gly  
 65 70 75 80  
 Lys Phe Leu Ser Glu His Leu Val Trp Leu Tyr Gly Asn Tyr Leu Lys  
 85 90 95  
 Leu Lys Tyr Leu Ile Leu Ser Arg His Arg Lys Glu Arg Arg Glu His  
 100 105 110  
 Val Cys Glu His Cys His Ser His Gly Met Gly His Asp Met Asn Ile  
 115 120 125  
 Glu Glu Lys Arg Ile Pro Ala Phe Leu Val Leu Ala Ile Leu Ile Val  
 130 135 140  
 Tyr Thr Ala Phe Gly Gly Val Leu Met Ser Lys Leu Glu Pro Trp Ser  
 145 150 155 160  
 Phe Phe Thr Ser Phe Tyr Trp Ser Phe Ile Thr Met Thr Thr Val Gly  
 165 170 175  
 Phe Gly Asp Leu Met Pro Arg Arg Asp Gly Tyr Met Tyr Ile Ile Leu  
 180 185 190  
 Leu Tyr Ile Ile Leu Gly Lys Phe Ser Met Lys Lys Lys Gln Lys Phe  
 195 200 205  
 Lys Ile Phe Leu Gly Leu Ala Ile Thr Thr Met Cys Ile Asp Leu Val  
 210 215 220  
 Gly Val Gln Tyr Ile Arg Lys Ile His Tyr Phe Gly Arg Lys Ile Gln

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225                      230                      235                      240  
 Asp Ala Arg Ser Ala Leu Ala val val Gly Gly Lys val val Leu Val  
                                  245                      250                      255  
 Ser Glu Leu Tyr Ala Asn Leu Met Gln Lys Arg Ala Arg Asn Met Ser  
                                  260                      265                      270  
 Arg Glu Ala Phe Ile val Glu Asn Leu Tyr val Ser Lys His Ile Ile  
                                  275                      280                      285  
 Pro Phe Ile Pro Thr Asp Ile Arg Cys Ile Arg Tyr Ile Asp Gln Thr  
                                  290                      295                      300  
 Ala Asp Ala Ala Thr Ile Ser Thr Ser Ser Ser Ala Ile Asp Met Gln  
                                  305                      310                      315                      320  
 Ser Cys Arg Phe Cys His Ser Arg Tyr Ser Leu Asn Arg Ala Phe Lys  
                                  325                      330                      335

xaa

<210> 39  
 <211> 17  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: DEGENERATE  
 PRIMER BASED ON HUMAN POTASSIUM CHANNELS

<220>  
 <221> variation  
 <222> (2)  
 <223> N AT BASE 2 INDICATES ANY NUCLEOTIDE

<400> 39  
 tnggatwygg wgaywyt

17

<210> 40  
 <211> 18  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: DEGENERATE  
 PRIMER BASED ON HUMAN POTASSIUM CHANNELS

<400> 40  
 rtcwccrwah ccdaydgt

18

<210> 41  
 <211> 28  
 <212> DNA  
 <213> Homo sapiens

<400> 41  
 cgcaggcaga gccacaaaga gtacacag

28

## 11420122.APP

<210> 42  
 <211> 26  
 <212> DNA  
 <213> Homo sapiens

<400> 42  
 ggagatcagc taggcacccat atttgg 26

<210> 43  
 <211> 26  
 <212> DNA  
 <213> Homo sapiens

<400> 43  
 atgctgcatg cctcatgctt cccagc 26

<210> 44  
 <211> 20  
 <212> DNA  
 <213> Homo sapiens

<400> 44  
 gggtatttaa agagagggct 20

<210> 45  
 <211> 426  
 <212> PRT  
 <213> Homo sapiens

<400> 45  
 Met Leu Pro Ser Ala Ser Arg Glu Arg Pro Gly Tyr Arg Ala Gly Val  
 1 5 10 15  
 Ala Ala Pro Asp Leu Leu Asp Pro Lys Ser Ala Ala Gln Asn Ser Lys  
 20 25 30  
 Pro Arg Leu Ser Phe Ser Thr Lys Pro Thr Val Leu Ala Ser Arg Val  
 35 40 45  
 Glu Ser Asp Thr Thr Ile Asn Val Met Lys Trp Lys Thr Val Ser Thr  
 50 55 60  
 Ile Phe Leu Val Val Val Leu Tyr Leu Ile Ile Gly Ala Thr Val Phe  
 65 70 75 80  
 Lys Ala Leu Glu Gln Pro His Glu Ile Ser Gln Arg Thr Thr Ile Val  
 85 90 95  
 Ile Gln Lys Gln Thr Phe Ile Ser Gln His Ser Cys Val Asn Ser Thr  
 100 105 110  
 Glu Leu Asp Glu Leu Ile Gln Gln Ile Val Ala Ala Ile Asn Ala Gly  
 115 120 125  
 Ile Ile Pro Leu Gly Asn Thr Ser Asn Gln Ile Ser His Trp Asp Leu  
 130 135 140  
 Gly Ser Ser Phe Phe Phe Ala Gly Thr Val Ile Thr Thr Ile Gly Phe  
 145 150 155 160

## 11420122.APP

Gly Asn Ile Ser Pro Arg Thr Glu Gly Gly Lys Ile Phe Cys Ile Ile  
 165 170 175

Tyr Ala Leu Leu Gly Ile Pro Leu Phe Gly Phe Leu Leu Ala Gly Val  
 180 185 190

Gly Asp Gln Leu Gly Thr Ile Phe Gly Lys Gly Ile Ala Lys Val Glu  
 195 200 205

Asp Thr Phe Ile Lys Trp Asn Val Ser Gln Thr Lys Ile Arg Ile Ile  
 210 215 220

Ser Thr Ile Ile Phe Ile Leu Phe Gly Cys Val Leu Phe Val Ala Leu  
 225 230 235 240

Pro Ala Ile Ile Phe Lys His Ile Glu Gly Trp Ser Ala Leu Asp Ala  
 245 250 255

Ile Tyr Phe Val Val Ile Thr Leu Thr Thr Ile Gly Phe Gly Asp Tyr  
 260 265 270

Val Ala Gly Gly Ser Asp Ile Glu Tyr Leu Asp Phe Tyr Lys Pro Val  
 275 280 285

Val Trp Phe Trp Ile Leu Val Gly Leu Ala Tyr Phe Ala Ala Val Leu  
 290 295 300

Ser Met Ile Gly Arg Leu Val Arg Val Ile Ser Lys Lys Thr Lys Glu  
 305 310 315 320

Glu Val Gly Glu Phe Arg Ala His Ala Ala Glu Trp Thr Ala Asn Val  
 325 330 335

Thr Ala Glu Phe Lys Glu Thr Arg Arg Arg Leu Ser Val Glu Ile Tyr  
 340 345 350

Asp Lys Phe Gln Arg Ala Thr Ser Ile Lys Arg Lys Leu Ser Ala Glu  
 355 360 365

Leu Ala Gly Asn His Asn Gln Glu Leu Thr Pro Cys Arg Arg Thr Leu  
 370 375 380

Ser Val Asn His Leu Thr Ser Glu Arg Asp Val Leu Pro Pro Leu Leu  
 385 390 395 400

Lys Thr Glu Ser Ile Tyr Leu Asn Gly Leu Ala Pro His Cys Ala Gly  
 405 410 415

Glu Glu Ile Ala Val Ile Glu Asn Ile Lys  
 420 425

<210> 46

<211> 2130

<212> DNA

<213> Homo sapiens

<220>

<221> unsure

<222> (35)

<223> N AT POSITION 35 INDICATES UNDETERMINED  
 NUCLEOTIDE



## 11420122.APP

<220>  
 <221> unsure  
 <222> (2057)  
 <223> N AT POSITION 2057 INDICATES UNDETERMINED  
 NUCLEOTIDE

<220>  
 <221> unsure  
 <222> (2067)  
 <223> N AT POSITION 2067 INDICATES UNDETERMINED  
 NUCLEOTIDE

<220>  
 <221> unsure  
 <222> (2111)  
 <223> N AT POSITION 2111 INDICATES UNDETERMINED  
 NUCLEOTIDE

<220>  
 <221> unsure  
 <222> (2120)  
 <223> N AT POSITION 2120 INDICATES UNDETERMINED  
 NUCLEOTIDE

<400> 46  
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 cgtgcagctc ggagcgcgca gcccgtctct gaataagaag tgagtacaat ggcgtgtttg 120  
 taaaaaaaaag cttcaagtcc gtctttttca aaaaacattt tgaatgctgc atgcctcatg 180  
 cttcccagcg cctcgcggga gagaccgggc tatagagcag gagtggcggc acctgacttg 240  
 ctggatccta aatctgcccgc tcagaactcc aaaccgaggc tctcattttc cacgaaaccc 300  
 acagtgcctt cttcccgggt ggagagtgc acgaccatta atgttatgaa atggaagacg 360  
 gtctccacga tattcctggt ggtgtctctc tatctgatca tcggagccac cgtgttcaaa 420  
 gcattggagc agcctcatga gatttcacag aggaccacca ttgtgatcca gaagcaaaca 480  
 ttcataatccc aacattcctg tgtcaattcg acggagctgg atgaactcat tcagcaaata 540  
 gtggcagcaa taaatgcagg gattataacc ttaggaaaca cttccaatca aatcagtcac 600  
 tgggatttgg gaagtctctt cttcttttgc ggcactgtta ttacaaccat aggatttggg 660  
 aacatctcac cagcacaga aggcggcaaa atattctgta tcactctatgc cttactggga 720  
 attccccctt ttggttttct cttggctgga gttggagatc agctaggcac catatttggg 780  
 aaaggaattg ccaaagtggg agatacgttt attaatggg atgttagtca gaccaagatt 840  
 cgcatacatc caacaatcat attataacta ttggctgtg tactctttgt ggctctgccc 900  
 gcgatcatat tcaaacacat agaaggctgg agtgccctgg acgccattta ttttgtgggt 960  
 atcactctaa caactattgg atttgggtgac tacgttgcag gtggatccga tattgaatat 1020  
 ctggacttct ataagcctgt cgtgtggttc tggatccttg tagggcttgc ttactttgct 1080  
 gctgtcctga gcatgattgg gagattgggt cgagtgatat ctaaaaagac aaaagaagag 1140  
 gtgggagagt tcagagcaca cgctgctgag tggagacca acgtcacagc cgaattcaaa 1200  
 gaaaccagga ggcgactgag tgtggagatt tatgacaagt tccagcgggc cacctccatc 1260  
 aagcgggaagc tctcggcaga actggctgga aaccacaatc aggagctgac tcttcttagg 1320  
 aggacctgtc cagtgaacca cctgaccagc gagagggatg tcttgcctcc cttactgaag 1380  
 actgagagta tctatctgaa tgggttggcg ccacactgtg ctggtgaaga gattgctgtg 1440  
 attgagaaca tcaaatagcc ctctctttaa ataaccttag gcatagccat aggtgaggac 1500  
 ttctctatgc tctttatgac tgttgcctgg agcatttttt aaattgtgca tgagctcaaa 1560  
 gggggaacaa aatagataca cccatcatgg tcatctatca tcaagagaat ttggaattct 1620  
 gagccagcac tttctttctg atgatgcttg ttgaacggcc cactttcttt gatgagtggg 1680  
 atgacaagca atgtctgatg cttttgtgtg cccagactgt tttcctctct ctttccctaa 1740  
 tgtgccataa ggccctcagaa tgaattgaga attgtttctg gtaacaatgt agctttgagg 1800  
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 tgacaacaat ttttttttgg taaatgacaa gaaattctta tgcagccttt tacctaagaa 1920  
 atttctgtca gtgccttatc ttatgaagaa acagaacctc tctagctaatt gtgtgggttc 1980  
 tcttccctg cccccacccc taggctcacc tctgcagtct tttacccag ttctcccat 2040  
 tgaataccat accttgnrtg aaacagngtg taaaatgact gaagtgatga tgccgaagat 2100  
 gaaatagatg ncaaatagah tggacattga 2130

## 11420122.APP

<210> 47  
 <211> 27  
 <212> DNA  
 <213> Homo sapiens

<400> 47  
 aaaagatcta aaatgcttcc cagcgcc 27

<210> 48  
 <211> 27  
 <212> DNA  
 <213> Homo sapiens

<400> 48  
 aaagtcgacc tatttgatgt tctcaat 27

<210> 49  
 <211> 27  
 <212> DNA  
 <213> Homo sapiens

<400> 49  
 aaaaagctta aaatgcttcc cagcgcc 27

<210> 50  
 <211> 27  
 <212> DNA  
 <213> Homo sapiens

<400> 50  
 aaatctagac tatttgatgt tctcaat 27

<210> 51  
 <211> 534  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> unsure  
 <222> (262)  
 <223> N AT POSITION 262 INDICATES UNDETERMINED  
 NUCLEOTIDE

<400> 51  
 aacaaaaacc ttttttgttt tgaatggcct agagagggta agggatcccc tgacgaacag 60  
 gagcagagcc agctagaacc tgggcctggc cagttcaagg ccaccagagg gcagccttct 120  
 gcggaaggca gtattggggg aggcaggac cccagcagac atggcactca gagctctcac 180  
 tgtccactga ctctctcttc tccaggttat ggccacatgg cccactatc gccaggcgga 240  
 aaggccttct gcatggctct antagccctt gggctgcccag cctccttagc tctcgtggcc 300  
 accctgcgcc attgcctgct gcctgtgctc agccgcccac gtgcctgggt agcgggtccac 360  
 tggcagctgt caccggccag ggctgcgctg ctgcaggcag ttgcactggg actgctgggtg 420  
 gccagcagct ttgtgctgct gccagcgtg gtgctgtggg gccttcaggg cgactgcagc 480  
 ctgctg999g ccgtctactt ctgcttcagc tcgctcagca ccattggcct gggg 534

<210> 52  
 <211> 956  
 <212> DNA

## 11420122.APP

&lt;213&gt; Mus musculus

&lt;400&gt; 52

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atgatacgaat ttaatacgaac tcaactatagg gaattttggcc ctcgaggcca agaatttcggc 60
acgaggagaa tgtgcgcacg ttggctctca tcgtgtgcac cttcacctac ctgctgggtgg 120
gcgcgcgggt gttcgacgca ctggagtcgg agccggagat gatcgagcgg cagcgggtcg 180
agctgcggca gctggagctg cgggcgcgct acaacctcag cgagggcggc tacgaggagc 240
tggagcgcgt cgtgctgcgc ctcaagccgc acaaggccgg cgtgcagtgg cgcttcgccg 300
gctccttcta cttcgccatc accgtcatca ccaccatcgg ctatggtcac gcggcgccca 360
gcacggacgg aggcaagggtg ttctgcatgt tctacgcgct gctgggcata ccgctcacac 420
tagtcatgtt ccagagcctg ggtgaacgca tcaacacctc cgtgaggtag ctgctgcacc 480
gtgccaaagag ggggctgggc atgcggcacg ccgaagtgtc catggccaac atggtgctca 540
tcggtttcgt gtcgtgcata agcacgctgt gcacgcggcg agctgccttc tcctactacg 600
agcgtcggac ttcttccag gcctattact actgcttcac caccctcacc accatcggct 660
tcggcgacta tgtggcgctg cagaaggacc aggcgtgca gacgcagccg cagtatgtgg 720
cttcagcttc gtgtacatcc tcacgggctc acggtcatcg gcgcttcctc aacctcgtgg 780
ctctgcgatt catgacatg aacgcccagg acgagaagcg tgatgcggag caccgcgccc 840
tgctcacgca caacggccag gctgtcggcc tgggtggcct gagctgcctg agcggtagcc 900
tgggcgacgg cgtgcgtccc cgcgaccag tcacatgcgc tgcggccgca agctta 956

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&lt;210&gt; 53

&lt;211&gt; 1055

&lt;212&gt; DNA

&lt;213&gt; Mus musculus

&lt;220&gt;

&lt;221&gt; unsure

&lt;222&gt; (247)

&lt;223&gt; N AT POSITION 247 INDICATES UNDETERMINED NUCLEOTIDE

&lt;220&gt;

&lt;221&gt; unsure

&lt;222&gt; (593)

&lt;223&gt; N AT POSITION 593 INDICATES UNDETERMINED NUCLEOTIDE

&lt;220&gt;

&lt;221&gt; unsure

&lt;222&gt; (952)

&lt;223&gt; N AT POSITION 952 INDICATES UNDETERMINED NUCLEOTIDE

&lt;400&gt; 53

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ctgaaaccat gggcccgata cctgctcctg cttatggccc acctgctggc catgggcctt 60
ggggctgtgg tgcttcaggc cctggagggc cctccagctc gccacctcca ggcccaggct 120
caggctgaac tggctagctt ccaggcagag cacaggccct gcttgccacc tgaggccctg 180
gaggagctgc taggtgcggt cctgagagca caggcccatg gagtttccag cctgggcaac 240
agctcanaga caagcaactg ggatctgccc tcagctctgc tgttcaactg cagcatcctc 300
accaccaccg gttatggcca catggcccca ctctcctcag gtggaaaggc cttctgtgtg 360
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ttgctgcctg tgttcagtcg cccagggtgac tgggtagcca ttcgctggca gctggcacca 480
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tacttctgtt tcggctcact cagcacgata ggcctaggag acttgctgcc tgcccatgga 660
cgtggcctgc acccagccat ttaccacctt gggcagtttg cacttcttgg ttacttgctc 720
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gccatggtga aattctttgg gccagtgggc tctagaaccg atgaagatca agatggcatc 840
ctaggccaag atgagctggc tctgagcact gtgctgcctg acgccccagt cttgggacca 900
accacccag cctgagcggg aggcaccaag gagtgttga agaacatagc angaagggtt 960
atgggaatga atatgtcatg ggataatgtt aattttaaaa attaaatggg ctgcttagca 1020
tgcaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaa 1055

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<210> 54  
 <211> 178  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> UNSURE  
 <222> (88)  
 <223> X AT POSITION 88 INDICATES UNDETERMINED RESIDUE

<400> 54  
 Asn Lys Asn Leu Phe Cys Phe Glu Trp Pro Arg Glu Gly Lys Gly Ser  
 1 5 10 15  
 Pro Asp Glu Gln Glu Gln Ser Gln Leu Glu Pro Gly Pro Gly Gln Phe  
 20 25 30  
 Lys Ala Thr Arg Gly Gln Pro Ser Ala Glu Gly Ser Ile Gly Val Gly  
 35 40 45  
 Arg Asp Pro Ser Arg His Gly Thr Gln Ser Ser His Cys Pro Leu Thr  
 50 55 60  
 Leu Ser Ser Pro Gly Tyr Gly His Met Ala Pro Leu Ser Pro Gly Gly  
 65 70 75 80  
 Lys Ala Phe Cys Met Val Leu Xaa Ala Leu Gly Leu Pro Ala Ser Leu  
 85 90 95  
 Ala Leu Val Ala Thr Leu Arg His Cys Leu Leu Pro Val Leu Ser Arg  
 100 105 110  
 Pro Arg Ala Trp Val Ala Val His Trp Gln Leu Ser Pro Ala Arg Ala  
 115 120 125  
 Ala Leu Leu Gln Ala Val Ala Leu Gly Leu Leu Val Ala Ser Ser Phe  
 130 135 140  
 Val Leu Leu Pro Ala Leu Val Leu Trp Gly Leu Gln Gly Asp Cys Ser  
 145 150 155 160  
 Leu Leu Gly Ala Val Tyr Phe Cys Phe Ser Ser Leu Ser Thr Ile Gly  
 165 170 175  
 Leu Gly

<210> 55  
 <211> 309  
 <212> PRT  
 <213> Mus musculus

<400> 55  
 Gly Ile Trp Pro Ser Arg Pro Arg Ile Arg His Glu Glu Asn Val Arg  
 1 5 10 15  
 Thr Leu Ala Leu Ile Val Cys Thr Phe Thr Tyr Leu Leu Val Gly Ala  
 20 25 30  
 Ala Val Phe Asp Ala Leu Glu Ser Glu Pro Glu Met Ile Glu Arg Gln  
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35

40

45

Arg Leu Glu Leu Arg Gln Leu Glu Leu Arg Ala Arg Tyr Asn Leu Ser  
 50 55 60

Glu Gly Gly Tyr Glu Glu Leu Glu Arg Val Val Leu Arg Leu Lys Pro  
 65 70 75 80

His Lys Ala Gly Val Gln Trp Arg Phe Ala Gly Ser Phe Tyr Phe Ala  
 85 90 95

Ile Thr Val Ile Thr Thr Ile Gly Tyr Gly His Ala Ala Pro Ser Thr  
 100 105 110

Asp Gly Gly Lys Val Phe Cys Met Phe Tyr Ala Leu Leu Gly Ile Pro  
 115 120 125

Leu Thr Leu Val Met Phe Gln Ser Leu Gly Glu Arg Ile Asn Thr Ser  
 130 135 140

Val Arg Tyr Leu Leu His Arg Ala Lys Arg Gly Leu Gly Met Arg His  
 145 150 155 160

Ala Glu Val Ser Met Ala Asn Met Val Leu Ile Gly Phe Val Ser Cys  
 165 170 175

Ile Ser Thr Leu Cys Ile Gly Ala Ala Ala Phe Ser Tyr Tyr Glu Arg  
 180 185 190

Trp Thr Phe Phe Gln Ala Tyr Tyr Tyr Cys Phe Ile Thr Leu Thr Thr  
 195 200 205

Ile Gly Phe Gly Asp Tyr Val Ala Leu Gln Lys Asp Gln Ala Leu Gln  
 210 215 220

Thr Gln Pro Gln Tyr Val Ala Ser Ala Ser Cys Thr Ser Ser Arg Ala  
 225 230 235 240

His Gly His Arg Arg Phe Leu Asn Leu Val Val Leu Arg Phe Met Thr  
 245 250 255

Met Asn Ala Glu Asp Glu Lys Arg Asp Ala Glu His Arg Ala Leu Leu  
 260 265 270

Thr His Asn Gly Gln Ala Val Gly Leu Gly Gly Leu Ser Cys Leu Ser  
 275 280 285

Gly Ser Leu Gly Asp Gly Val Arg Pro Arg Asp Pro Val Thr Cys Ala  
 290 295 300

Ala Ala Ala Ser Leu  
 305

<210> 56  
 <211> 304  
 <212> PRT  
 <213> MUS musculus

<220>  
 <221> UNSURE  
 <222> (83)  
 <223> N AT POSITION 83 INDICATES UNDETERMINED RESIDUE  
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&lt;220&gt;

&lt;221&gt; UNSURE

&lt;222&gt; (198)

&lt;223&gt; N AT POSITION 198 INDICATES UNDETERMINED RESIDUE

&lt;400&gt; 56

Leu Lys Pro Trp Ala Arg Tyr Leu Leu Leu Leu Met Ala His Leu Leu  
 1 5 10 15

Ala Met Gly Leu Gly Ala Val Val Leu Gln Ala Leu Glu Gly Pro Pro  
 20 25 30

Ala Arg His Leu Gln Ala Gln Val Gln Ala Glu Leu Ala Ser Phe Gln  
 35 40 45

Ala Glu His Arg Ala Cys Leu Pro Pro Glu Ala Leu Glu Glu Leu Leu  
 50 55 60

Gly Ala Val Leu Arg Ala Gln Ala His Gly Val Ser Ser Leu Gly Asn  
 65 70 75 80

Ser Ser Xaa Thr Ser Asn Trp Asp Leu Pro Ser Ala Leu Leu Phe Thr  
 85 90 95

Ala Ser Ile Leu Thr Thr Thr Gly Tyr Gly His Met Ala Pro Leu Ser  
 100 105 110

Ser Gly Gly Lys Ala Phe Cys Val Val Tyr Ala Ala Leu Gly Leu Pro  
 115 120 125

Ala Ser Leu Ala Leu Val Ala Ala Leu Arg His Cys Leu Leu Pro Val  
 130 135 140

Phe Ser Arg Pro Gly Asp Trp Val Ala Ile Arg Trp Gln Leu Ala Pro  
 145 150 155 160

Ala Gln Ala Ala Leu Leu Gln Ala Ala Gly Leu Gly Leu Leu Val Ala  
 165 170 175

Cys Val Phe Met Leu Leu Pro Ala Leu Val Leu Trp Gly Val Gln Gly  
 180 185 190

Asp Trp Gln Pro Ala Xaa Thr Ile Tyr Phe Cys Phe Gly Ser Leu Ser  
 195 200 205

Thr Ile Gly Leu Gly Asp Leu Leu Pro Ala His Gly Arg Gly Leu His  
 210 215 220

Pro Ala Ile Tyr His Leu Gly Gln Phe Ala Leu Leu Gly Tyr Leu Leu  
 225 230 235 240

Leu Gly Leu Leu Ala Met Leu Leu Ala Val Glu Thr Phe Ser Glu Leu  
 245 250 255

Pro Gln Val Arg Ala Met Val Lys Phe Phe Gly Pro Ser Gly Ser Arg  
 260 265 270

Thr Asp Glu Asp Gln Asp Gly Ile Leu Gly Gln Asp Glu Leu Ala Leu  
 275 280 285

Ser Thr Val Leu Pro Asp Ala Pro Val Leu Gly Pro Thr Thr Pro Ala  
 290 295 300

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<210> 57  
<211> 9  
<212> PRT  
<213> Artificial Sequence

<220>  
<221> VARIANT  
<222> (1)..(9)  
<223> X AT POSITIONS 1, 4, AND 5 IS T OR S; X AT  
POSITION 6 IS I OR V; X AT POSITIONS 2, 3, AND 8  
IS Y, F, V, I, M, OR L

<220>  
<223> Description of Artificial Sequence: POTASSIUM ION  
CHANNEL SEQUENCE

<400> 57  
Xaa Xaa Xaa Xaa Xaa Gly Xaa Gly  
1 5

<210> 58  
<211> 8  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: POTASSIUM ION  
CHANNEL SEQUENCE

<220>  
<221> VARIANT  
<222> (1)..(8)  
<223> X AT POSITION 1 IS Y OR F; X AT POSITION 2 IS A,  
S, OR G; X AT POSITIONS 3, 4, 6, AND 8 ARE M, I,  
V, L, F, OR Y

<400> 58  
Xaa Xaa Xaa Gly Xaa Pro xaa  
1 5

<210> 59  
<211> 7  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: POTASSIUM ION  
CHANNEL SEQUENCE

<400> 59  
Tyr Ala Leu Leu Gly Ile Pro  
1 5

<210> 60  
<211> 7

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&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence: POTASSIUM ION  
CHANNEL SEQUENCE

&lt;220&gt;

&lt;221&gt; VARIANT

&lt;222&gt; (6)

&lt;223&gt; X AT POSITION 6 IS M, I, V, L, F, OR Y

&lt;400&gt; 60

Tyr Ala Leu Leu Gly Xaa Pro  
1 5

&lt;210&gt; 61

&lt;211&gt; 178

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; UNSURE

&lt;222&gt; (88)

&lt;223&gt; X AT POSITION 88 INDICATES UNDETERMINED RESIDUE

&lt;400&gt; 61

Asn Lys Asn Leu Phe Cys Phe Glu Trp Pro Arg Glu Gly Lys Gly Ser  
1 5 10 15Pro Asp Glu Gln Glu Gln Ser Gln Leu Glu Pro Gly Pro Gly Gln Phe  
20 25 30Lys Ala Thr Arg Gly Gln Pro Ser Ala Glu Gly Ser Ile Gly Val Gly  
35 40 45Arg Asp Pro Ser Arg His Gly Thr Gln Ser Ser His Cys Pro Leu Thr  
50 55 60Leu Ser Ser Pro Gly Tyr Gly His Met Ala Pro Leu Ser Pro Gly Gly  
65 70 75 80Lys Ala Phe Cys Met Val Leu Xaa Ala Leu Gly Leu Pro Ala Ser Leu  
85 90 95Ala Leu Val Ala Thr Leu Arg His Cys Leu Leu Pro Val Leu Ser Arg  
100 105 110Pro Arg Ala Trp Val Ala Val His Trp Gln Leu Ser Pro Ala Arg Ala  
115 120 125Ala Leu Leu Gln Ala Val Ala Leu Gly Leu Leu Val Ala Ser Ser Phe  
130 135 140Val Leu Leu Pro Ala Leu Val Leu Trp Gly Leu Gln Gly Asp Cys Ser  
145 150 155 160Leu Leu Gly Ala Val Tyr Phe Cys Phe Ser Ser Leu Ser Thr Ile Gly  
165 170 175

Leu Gly



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<210> 62  
 <211> 309  
 <212> PRT  
 <213> Mus-musculus

<400> 62  
 Gly Ile Trp Pro Ser Arg Pro Arg Ile Arg His Glu Glu Asn Val Arg  
 1 5 10 15  
 Thr Leu Ala Leu Ile Val Cys Thr Phe Thr Tyr Leu Leu Val Gly Ala  
 20 25 30  
 Ala Val Phe Asp Ala Leu Glu Ser Glu Pro Glu Met Ile Glu Arg Gln  
 35 40 45  
 Arg Leu Glu Leu Arg Gln Leu Glu Leu Arg Ala Arg Tyr Asn Leu Ser  
 50 55 60  
 Glu Gly Gly Tyr Glu Glu Leu Glu Arg Val Val Leu Arg Leu Lys Pro  
 65 70 75 80  
 His Lys Ala Gly Val Gln Trp Arg Phe Ala Gly Ser Phe Tyr Phe Ala  
 85 90 95  
 Ile Thr Val Ile Thr Thr Ile Gly Tyr Gly His Ala Ala Pro Ser Thr  
 100 105 110  
 Asp Gly Gly Lys Val Phe Cys Met Phe Tyr Ala Leu Leu Gly Ile Pro  
 115 120 125  
 Leu Thr Leu Val Met Phe Gln Ser Leu Gly Glu Arg Ile Asn Thr Ser  
 130 135 140  
 Val Arg Tyr Leu Leu His Arg Ala Lys Arg Gly Leu Gly Met Arg His  
 145 150 155 160  
 Ala Glu Val Ser Met Ala Asn Met Val Leu Ile Gly Phe Val Ser Cys  
 165 170 175  
 Ile Ser Thr Leu Cys Ile Gly Ala Ala Ala Phe Ser Tyr Tyr Glu Arg  
 180 185 190  
 Trp Thr Phe Phe Gln Ala Tyr Tyr Tyr Cys Phe Ile Thr Leu Thr Thr  
 195 200 205  
 Ile Gly Phe Gly Asp Tyr Val Ala Leu Gln Lys Asp Gln Ala Leu Gln  
 210 215 220  
 Thr Gln Pro Gln Tyr Val Ala Ser Ala Ser Cys Thr Ser Ser Arg Ala  
 225 230 235 240  
 His Gly His Arg Arg Phe Leu Asn Leu Val Val Leu Arg Phe Met Thr  
 245 250 255  
 Met Asn Ala Glu Asp Glu Lys Arg Asp Ala Glu His Arg Ala Leu Leu  
 260 265 270  
 Thr His Asn Gly Gln Ala Val Gly Leu Gly Gly Leu Ser Cys Leu Ser  
 275 280 285  
 Gly Ser Leu Gly Asp Gly Val Arg Pro Arg Asp Pro Val Thr Cys Ala

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300

290

295

Ala Ala Ala Ser Leu  
305

&lt;210&gt; 63

&lt;211&gt; 434

&lt;212&gt; PRT

&lt;213&gt; Caenorhabditis elegans

&lt;400&gt; 63

Met Val Ile Ile Asn Arg Ser Asn Thr Tyr Ala Val Glu Gln Glu Ala  
1 5 10 15Phe Pro Arg Asp Lys Tyr Asn Ile Val Tyr Trp Leu Val Ile Leu Val  
20 25 30Gly Phe Gly Val Leu Leu Pro Trp Asn Met Phe Ile Thr Ile Ala Pro  
35 40 45Glu Tyr Tyr Val Asn Tyr Trp Phe Lys Pro Asp Gly Val Glu Thr Trp  
50 55 60Tyr Ser Lys Glu Phe Met Gly Ser Leu Thr Ile Gly Ser Gln Leu Pro  
65 70 75 80Asn Ala Ser Ile Asn Val Phe Asn Leu Phe Leu Ile Ile Ala Gly Pro  
85 90 95Leu Ile Tyr Arg Val Phe Ala Pro Val Cys Phe Asn Ile Val Asn Leu  
100 105 110Thr Ile Ile Leu Ile Leu Val Ile Val Leu Glu Pro Thr Glu Asp Ser  
115 120 125Met Ser Trp Phe Phe Trp Val Thr Leu Gly Met Ala Thr Ser Ile Asn  
130 135 140Phe Ser Asn Gly Leu Tyr Glu Asn Ser Val Tyr Gly Val Gly Gly Asp  
145 150 155 160Phe Pro His Thr Tyr Ile Gly Ala Leu Leu Ile Gly Asn Asn Ile Cys  
165 170 175Gly Leu Leu Ile Thr Val Val Lys Ile Gly Val Thr Tyr Phe Leu Asn  
180 185 190Asp Glu Pro Lys Leu Val Ala Ile Val Tyr Phe Gly Ile Ser Leu Val  
195 200 205Ile Leu Leu Val Cys Ala Ile Ala Leu Phe Phe Ile Thr Lys Gln Asp  
210 215 220Phe Tyr His Tyr His His Gln Lys Gly Met Glu Ile Arg Glu Lys Ala  
225 230 235 240Glu Thr Asp Arg Pro Ser Pro Ser Ile Leu Trp Thr Thr Phe Thr Asn  
245 250 255Cys Tyr Gly Gln Leu Phe Asn Val Trp Phe Cys Phe Ala Val Thr Leu  
260 265 270

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Thr Ile Phe Pro Val Met Met Thr Val Thr Thr Arg Gly Asp Ser Gly  
 275 280 285

Phe Leu Asn Lys Ile Met Ser Glu Asn Asp Glu Ile Tyr Thr Leu Leu  
 290 295 300

Thr Ser Phe Leu Val Phe Asn Leu Phe Ala Ala Ile Gly Ser Ile Val  
 305 310 315 320

Ala Ser Lys Ile His Trp Pro Thr Pro Arg Tyr Leu Lys Phe Ala Ile  
 325 330 335

Ile Leu Arg Ala Leu Phe Ile Pro Phe Phe Phe Phe Cys Asn Tyr Arg  
 340 345 350

Val Gln Thr Arg Ala Tyr Pro Val Phe Phe Glu Ser Thr Asp Ile Phe  
 355 360 365

Val Ile Gly Gly Ile Ala Met Ser Phe Ser His Gly Tyr Leu Ser Ala  
 370 375 380

Leu Ala Met Gly Tyr Thr Pro Asn Val Val Pro Ser His Tyr Ser Arg  
 385 390 395 400

Phe Ala Ala Gln Leu Ser Val Cys Thr Leu Met Val Gly Leu Leu Thr  
 405 410 415

Gly Gly Leu Trp Pro Val Val Ile Glu His Phe Val Asp Lys Pro Ser  
 420 425 430

Ile Leu

<210> 64

<211> 7

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: POTASSIUM ION  
 CHANNEL SEQUENCE

<220>

<221> VARIANT

<222> (1)..(7)

<223> X AT POSITION 1 IS Y OR F; X AT POSITION 2 IS A,  
 S, OR G; X AT POSITIONS 3, 4, AND 6 ARE M, I, V,  
 L, F, OR Y

<400> 64

Xaa Xaa Xaa Xaa Gly Xaa Pro  
 1 5

<210> 65

<211> 4

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Consensus  
 sequence between Ce orf1 and Dm orf1

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<400> 65  
Thr Trp Thr Phe  
1

<210> 66  
<211> 4  
<212> PRT  
<213> Artificial Sequence

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<220>  
<223> Description of Artificial Sequence: consensus  
sequence between Ce orf1 and Dm orf1

<400> 66  
Gly Tyr Gly Asn  
1

32  
<210> 67  
<211> 4  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: consensus  
sequence between Ce orf1 and Dm orf1

<400> 67  
Gly Phe Gly Asp  
1

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